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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/449,034	11/24/1999	LOWELL D. BOK	4865/49-BFG1	5756

757 7590 04/18/2003

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ART UNIT	PAPER NUMBER
3683	

DATE MAILED: 04/18/2003

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 29

Application Number: 09/449,034
Filing Date: November 24, 1999
Appellant(s): BOK ET AL.

Helen A. Odar
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 2/6/03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-5, 11, and 13-16 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,742,895	***Bok***	***5-1988***
CA-2004091	***Guichard et al.***	***5/1990***

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not provide support for the brake disks, end plate and pressure plate each comprising of disks with wear faces having three different wear portions. The claim language reads as if the end plate, for example, is made up of more than one disk and as if the wear faces have three different wear portions. Clarification is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 11, and 13-16 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Canadian Patent CA-2004091 in view of Bok '895.

Re: claims 1, 4, 5, 11 and 13. CA-2004091 shows in figures 1 and 2 a brake disk assembly comprising an end plate 4,S5, a pressure plate 5,S1 and initially brake disks R1-R4 and S1-S5 axially aligned and disposed therebetween, wherein the brake disks, end plate and pressure plate comprise disks of three different wear portions whereby disks of a first thickness S1, R1, R2 (thickness = E+4e) have an initial wear portion (4e), disk of a second thickness S3 (thickness = E+3e) have approximately two thirds (3e) of the initial wear portion of the first thickness disk, and disk of a third thickness S5 (thickness = E+e) have approximately one third (e) of the initial wear portion of the first thickness disk, the brake disk assembly including disks of a first, second, and third thickness, whereby at an overhaul the available wear portion of the first thickness disk is approximately equal to the initial available wear portion (3e) of the second thickness disk, and the available wear portion of the second thickness disk is about equal to the initial available wear portion (e) of the third thickness disk, and the available wear portion of the third thickness disk is substantially fully worn, whereby the third thickness disk is removed and replaced with disk of a first, second or third thickness as disclosed from the last paragraph on pg. 3 to the end of the first full paragraph on pg. 5 of the English translation, but does not disclose that the ratio of the initial available wear portion of the second and third thickness disks are exactly 2/3 and 1/3 of the initial

available wear portion of the first thickness disk, respectively, and does not show in the two figures that the second and third thickness disks each comprises a plurality of disks.

Bok '895 teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments - one advantage being piston travel. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the available wear portions of the second and third thickness disks of CA-2004091, in view of the teachings of Bok, to have been exactly 2/3 and 1/3 of the initial available wear portion of the first thickness disk, respectively, or any other appropriate ratio as determined by routine experimentation in order to optimize system performance by utilizing the appropriate thickness discs to achieve the desired performance results.

CA-2004091 teaches in figures 1 and 2 the use of a brake disk assembly in which the first thickness disk comprising a plurality of disks S1, R1, R2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second and third thickness disks of CA-2004091 with a plurality of disks, in view of the teaching in CA-2004091 of the plurality of disks of the first thickness, in order to provide a means of increasing the total braking capacity of the assembly.

Re: claim 2. CA-2004091 shows an actuator 3 in figures 1 and 2.

Re: claims 3 and 16. CA-2004091, as modified, teaches the use of a plurality of rotors and stators in figures 1 and 2. It would have been obvious to one of ordinary skill in the art to have constructed the brake assembly of CA-2004091, in view of the

teachings of CA-2004091, with a varying number of rotors and stators depending on the amount of braking force required which would be based on the type of aircraft in which the brake would be used.

Re: claims 14 and 15. Bok '895 teaches in figure 4 the use of a pressure

plate left side 48 and an end plate right side 48 which also comprise brake disks. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the brake assembly of CA-2004091, as modified, to have included a pressure plate and an end plate comprising brake disks, as taught by Bok '895, in order to provide increased braking capacity. Bok '895 also teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments - one advantage being piston travel. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the available wear portions of the pressure plate and end plates comprising brake disks of CA-2004091, as modified, in view of the teachings of Bok, to have included available wear portions of differing or specifically two times the thickness of the other or any other appropriate ratio as determined by routine experimentation in order to optimize system performance by utilizing the appropriate thickness discs to achieve the desired performance results.

(11) Response to Argument

With regards to the specification objection, Examiner acknowledged in the advisory action of paper no. 23 that the specification objection had been overcome by Applicant's remarks.

With regards to the 112 rejections, Applicant argues on pg. 10 of the Appeal Brief that the specification discloses that "[t]he rotors, stators, end plate and pressure plate are of three different sizes" and that "[t]he rotors and stators of the disk brake assembly of the instant invention have three different thicknesses...". Examiner notes, however,

that the cited statements clearly do not support the limitation of "the brake disks, end plate and pressure plate, each comprising of *disks*" recited in lines 2-3 of claim 1. The claim limitation reads as if the pressure plate, for example, is made up of more than one disk. The pressure plate, however, is described on pg. 8 line 22 of the specification and shown in figure 1 of the instant application as simply including element 38. Applicant further argues on pg. 10 of the Appeal Brief that a wear face "*can have one of three* different wear portions". However, it is noted that claim 1 does not recite that the wear face "*can have one of three* different wear portions" but recites wear faces "*having three* different wear portions". It is apparent that Applicant is discussing a limitation that is not recited in the claim.

With regards to the 103 rejections, Applicant argues that "it is not evident that CA-2004091 actually shows disks (including the end plate and pressure plate) of three thicknesses due to three wear portions, where the second thickness disks are two thirds of the thickness of the first disks and the third thickness disks are one third of the thickness of the first disks". First, Examiner emphasizes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Examiner notes that it is not CA-2004091 alone, but the combination of CA-2004091 in view of Bok that teaches the claimed invention. Examiner further notes that CA-2004091 shows in figures 1 and 2 disks S1,R1,R2,S3,S5 (including the end plate 4,S5 and pressure plate 5,S1 and some of the brake disks R1-R4 and S2-S4) of three

thicknesses due to three wear portions 4e, 3e, and e. Disks S1,R1,R2 have a first thickness E+4e due to the wear portion 4e as disclosed on pg. 3 line 3 from the bottom of CA-2004091 and in lines 9-10 of pg. 4 of CA-2004091. Disk S3 has a second thickness E+3e due to the wear portion 3e as disclosed in line 6 of pg. 4 of CA-2004091. Disk S5 has a third thickness E+e due to the wear portion e as disclosed in line 7 of pg. 4 of CA-2004091. Examiner notes that wear portion 3e which is associated with the second thickness disk is approximately two-thirds of wear portion 4e which is associated with the first thickness disks and that wear portion e which is associated with the third thickness disk is approximately one-third of wear portion 4e.

Since the thickness ratios set forth in CA-2004091 are approximate and not exactly two-thirds and one-third of the first thickness disks as set forth in the claim language, Examiner turns to the Bok reference which teaches in col. 5 lines 40-42 that the thickness of a wear portion of a disk of a brake assembly may be varied to obtain certain advantages. In light of the teachings of Bok, Examiner maintains that it would have been obvious to one of ordinary skill in the brake art to have modified the ratios to have been exactly two-thirds, one-third, or any other appropriate ratio as determined by routine experimentation in order to optimize brake system performance by achieving, for example, certain advantages such as those associated with piston travel.

Since the second thickness disk and the third thickness disk include only one respective disk, Examiner turns to the teaching of multiple first thickness disks S1,R1,R2 shown in figure 1 of CA-2004091 to show that it is well-known in the brake art to utilize a plurality of disks to increase total braking capacity of a brake assembly.

Applicant also states that CA-2004091 does not provide replacing the fully worn disks with a disk of a first, second or third thickness as claimed. Examiner recognizes that the removal and replacement limitation is a process within the product claim. Although section 2113 of the MPEP states that in a product-by-process claim, the determination of patentability is based on the product itself, Examiner considered the process. It is noted that lines 6-7 of pg. 5 of CA-2004091 describe the substantially fully worn third thickness disk S5 being removed and replaced by the second thickness disk S3.

The arguments on pg. 11 of the Appeal Brief that CA-2004091 does not show "any disk with a three wear portion on a single wear face", "three thicknesses of rotors in the assembly itself", and "an end plate and pressure plate having three different thicknesses" are irrelevant since they are more specific than the claim language. The argument that the disks in CA-2004091 are "moved sideways" is also irrelevant since the claim language simply recites that the substantially fully worn disks are removed and replaced with disks of a first, second or third thickness and does not preclude particular methods of effecting the removal and replacement of the substantially fully worn disks.

In response to Applicant's argument that a reference itself cannot be used as a base reference as well as the modifying reference in an obviousness rejection, Examiner notes that in section 706.02(j) of the MPEP it is stated that 35 U.S.C. 103 authorizes the modification of a single reference and requires that there is provided an explanation why one of ordinary skill in the art at the time the invention was made would

have been motivated to make the proposed modification. Examiner reiterates that the modification of CA-2004091 involving the use of a plurality of disks (which is a duplication of parts) would have been obvious to one of ordinary skill in the brake art at the time the invention was made to provide a means of increasing the total braking capacity of a brake assembly.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

mmb 4/15/03
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April 15, 2003

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